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(71) Applicant: VERY INCREDIBLE PRODUCTS INC.
720 West 17th Street
Costa Mesa California 92627(US)

(72) Inventor: Jacobson, Jeff A.
409 Emerald Bay
Laguna Beach California 92651(US)

(74) Representative: Wotherspoon, Graham et al
FITZPATRICKS 4 West Regent Street
Glasgow G2 1RS Scotland(GB)

## (54) Method for removing wrinkles from a textile material.

(57) A method for removing creases and wrinkles from a textile fabric material by spraying the wrinkled area with an alcohol-aqueous solution containing a surfactant material. The spraying is continued until the wrinkled area is covered thoroughly but not thoroughly saturated, then allowed to rest for a predetermined period of time. The treated fabric material is then held tight with one hand and the wrinkles are smoothed out slowly with the other hand and this step is repeated for one or more times, if necessary. The treated material is now allowed to dry. In another embodiment of the invention, pleats are restored to pleated materials by spraying the pleat along the pleat line with the same solution, holding the pleat with one hand at the bottom and grasping the pleat with the other hand at the top. The hand grasping the pleat is now moved downwardly while the other hand holds the pleat thus restoring the pleat to the pleated material.

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# METHOD FOR REMOVING WRINKLES FROM A TEXTILE FABRIC MATERIAL

The invention relates to removal of wrinkles from fabrics; and, more particularly, to a method for removing creases, adding creases or pleats where desired, or removing wrinkles from textile fabric materials.

It is now well known in the art that wrinkles and creases can be removed from textile fabric materials by the application of certain liquid solutions. Such solutions are generally sprayed into the material penetrating the yarns thereof and relaxing or removing tension on the yarns thereby removing the wrinkles. In the past, moisturized heat, such as steam, has been used along with such solutions to remove wrinkles. However, it is sometimes inconvenient to have a source of heat available. It is preferable that such solutions be readily available, easy to transport and convenient to use without the need for heat. For example, a spray in an aerosol-type can is preferable which can may be carried along with a traveller or the like and sprayed on fabrics to remove wrinkles and creases.

In U.S. Patent No. 3,674,688 to Schwartz et al., the teachings of which are incorporated herein by reference, a suitable wrinkle removing product in the form of an alcohol--aqueous solution containing a quaternary ammonium salt surfactant is disclosed. Such a solution is useful in treating wrinkles and creases but no method for treating wrinkles using such solution is disclosed. Although it is disclosed that such solution be sprayed on a wrinkled area, and is effective somewhat in removing wrinkles from fabrics that are so treated, a truly effective way to remove wrinkles is not disclosed in the Schwartz et al. patent. Further, there is a need for a similar method of restoring pleats in pleated materials. It is preferable that a solution, such as Schwartz et al.'s solution, could both remove wrinkles from creased or wrinkled materials and restore pleats in pleated materials.

According to one aspect of the invention there is provided a method for removing creases and wrinkles from a textile fabric material comprising the steps of spraying a wrinkled area of said material with an alcohol-aqueous solution containing a surfactant material until said fabric material is thoroughly covered with said solution but not thoroughly saturated subsequently smoothing out said covered and wrinkled area after a predetermined period of time by holding the fabric material tight with one hand and smoothing out the wrinkles slowly with the other hand, subsequently repeating the step of smoothing out said covered and wrinkled area, and subsequently allowing said covered and wrinkled area to dry thoroughly.

According to another aspect of the invention there is provided a method for restoring a pleat having a pleat line in a textile fabric material comprising the steps of spraying an acohol-aqueous solution containing a surfactant material along said pleat line until said pleat is covered with said solution but not thoroughly saturated, grasping said fabric at the top after spraying said pleat after a predetermined period of time, between the thumb and forefinger of one hand while holding said fabric at said pleat with the other hand at the bottom thereof, and moving said one hand downwardly along said pleat creasing the same between said thumb and forefinger while holding said pleat tightly with the other hand.

The invention is directed to a method for penetrating and wetting yarns of a material by covering the same thoroughly without thorough saturated to either restore pleats in pleated fabric material or remove creases and wrinkles. Although any suitable wrinkle removing solution may be used, such as any alcohol-squeous solution containing a surfactant, the method disclosed herein is particularly effective in utilizing a solution of the type disclosed in U.S. Patent No. 3,674,688 to Schwartz et al., the teachings of which are incorporated herein by reference.

In the Schwartz et al. patent, the solution therein is described as an alcohol-aqueous solution having a surfactant material incorporated herein. As disclosed in Schwartz et al., a distilled or demineralized water is preferably used so that the product will not have residual dissolved solids in the treated fabric after the fabric has dried. Fast drying alcohols are preferred in the alcohol-aqueous solvent solution such as isopropyl alcohol or ethyl alcohol.

The surfactant material is preferably of the cationic type and should have the property of being able to penetrate and wet the yarns of wrinkled fabric in a low concentration solution. The surfactant should not harm the fabric or the dye system of the fabric and should not have a residual ring or mark in the fabric on drying. Organic quaternary ammonium salts have proven to be the most satisfactory of the cationic surfactant materials. In particular, a dialicyl dimethyl ammonium chloride has proven to be the most satisfactory material. The dialicyl dimethyl ammonium chloride has the structural formula where R and $R_1$ are alkyl chains having from 16 to 18 carbon atoms. A suitable dialkyl dimethyl ammonium chloride surfactant may be obtained from the Armour Industrial Chemical Company under the trade name Arquad 2HT. The surfactant material contains about 24 percent hexadecyl and 75 percent octadecyl chains. Two long alkyl chains of the surfactant materials seem to be partly responsible for the relaxing effect of the surfactant material. It is probable that as the positively charged surfactant material attaches itself to the relatively negatively charged textile material and wets it, the surfactant molecule orients itself toward the yarns or fibres in the textile material leaving the alkyl chains exposed. The exposed alkyl chains impart surface softness and lubricity to the yarns and relax the surface tension in the wrinkled yarns..

Typically, the finished product will contain between about 75 and 85 percent by weight distilled water, between about 15 and 25 percent by weight alcohol, between about 0.4 and 0.6 percent by weight surfactant, and between about 0 and 0.5 percent by weight perfume. The perfumes used may be any of the commercially available scents which are soluble to an alcohol-aqueous cosolvent system.

As disclosed in the Schwartz et al. patent, such solution may be packaged in aerosol or pump-mist type cans for easy travel.

In the method of this invention, a wrinkled and creased area of a textile fabric material is first sprayed with any suitable alcohol-aqueous solution containing a surfactant, such as the solution disclosed in U.S. Patent no 3,674,688 discussed hereinabove. The material being treated is sprayed thoroughly until the material is covered but not thoroughly saturated. The treated material is now allowed to rest for a predetermined period of time allowing the solution to penetrate into the yarns of the material.

This time period has been found to vary but, preferably, a period of ten to twenty seconds is sufficient.

After such period, the treated area is smoothed out in any suitable manner. This may be accomplished by holding the sprayed material tight with one hand and smoothing the wrinkles out slowly with the other hand. This is preferably carried out several times, if necessary.

The smoothed and treated area is now allowed to dry thoroughly. This period of time will vary, as, for example, the solution in the treated material may evaporate to dryness in from about a few minutes to one hour.

In the case of thicker fabrics, it may be necessary to repeat the foregoing steps.

In addition to the foregoing, in a further embodiment of the invention, the Schwartz et al. solution is particularly effective in restoring pleats or creases in pleated fabrics, such as drapenes or the like.

Thus, in such cases, the pleat is sprayed along its pleat line using an alcohol-aqueous solution containing a surfactant. The pleat is now held at the bottom with one hand and grasped at the top between the thumb and forefinger with the other hand. The latter hand is now moved downwardly along the pleat pressing or creasing the pleat together while holding it tight at the bottom with the other hand. Again, as heretofore discussed, the solution may be that disclosed in U.S. Patent No. 3,674,688 to Schwartz et al. Also, the treated pleat is covered thoroughly but not thoroughly saturated and, after a predetermined period of time, such as ten to twenty seconds, creased as discussed and allowed to dry thoroughly. In the case of thick fabric materials, the foregoing steps may have to be repeated. Thus, a novel method is disclosed for restoring pleats in fabrics, such as drapenes or the like.

It can be seen that there has been disclosed a unique method using known wrinkle removing solutions for removing wrinkles and creases from textile fabrics and restoring pleats to pleated materials.

**Claims**

1. A method for removing creases and wrinkles from a textile fabric material comprising the steps of spraying a wrinkled area of said material with an alcohol-aqueous solution containing a surfactant material, until said fabric material is thoroughly covered with said solution but not thoroughly saturated, subsequently smoothing out said covered and wrinkled area after a predetermined period of time by holding the fabric material tight with one hand and smoothing out the wrinkles slowly with the other hand, subsequently repeating the step of smoothing out said covered and wrinkled area, and subsequently allowing said covered and wrinkled area to dry thoroughly.

2. A method according to claim 1, comprising the step of repeating the steps of spraying, covering, smoothing and repeating said smoothing in the case of the thicker wrinkled fabrics.

3. A method for restoring a pleat having a pleat line in a textile fabric material comprising the steps of spraying an alcohol-aqueous solution containing a surfactant material along said pleat line until said pleat is covered with said solution but not thoroughly saturated, grasping said fabric at the top after spraying said pleat after a predetermined period of time, between the thumb and forefinger of one hand while holding said fabric at said pleat with the other hand at the bottom thereof, and moving said one hand downwardly along said pleat creasing the same between said thumb and forefinger while holding said pleat tightly with the other hand.

4. A method according to claims 1, 2 or 3, wherein the said predetermined period of time is about ten to twenty seconds.

5. A method according to any preceding claims, wherein the step of spraying includes the step of spraying with an alcohol-aqueous solution selected from the group consisting of isopropyl-alcohol water and ethyl alcohol-water.

6. A method according to any one of claims 1 to 4, wherein the step of spraying includes the step of spraying with an alcohol-aqueous solution containing a cationic surfactant material.

7. A method according to any one of claims 1 to 4, wherein the step of spraying includes the step of spraying with an alcohol-aqueous solution containing a quaternary ammonium compound.

8. A method according to any one of claims 1 to 4, wherein the step of spraying includes the step of spraying with an alcohol-aqueous solution containing a quaternary ammonium chloride salt having the structure where R and $R_1$ are alkyl chains from 16 to 18 carbon atoms.

9. A method according to any one of claims 1 to 4, wherein the step of spraying includes the step of spraying with an alcohol-aqueous solution having a surfactant in proportion of from about 0.4 to 0.6 of 1 percent by weight, the alcohol-aqueous solution consisting essentially of from about 75 percent to 85 percent by weight water, and from 15 percent to 25 percent by weight of an alcohol selected from the group consisting of isopropyl alcohol and ethyl alcohol; the surfactant being selected from the group consisting of quaternary ammonium salts surfactant having the structural formula where R and $R_1$ are alkyl chains from 16 to 18 carbon atoms.